

Tower Safety and Site Safety and R-56 Grounding

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Tower Training Outline

Proper Dress

Substantial leather boots with hard soles, no tennis or casual shoes. Dress according to weather conditions. No coats or rain gear are to be worn over full body harness. If you need to add or remove garments, you must go to ground level to do so. Gloves are optional; use good judgment.

Radio Communications

Tower and ground people must have radio communication if they are working above the 50' level. The crew must establish a system of communication with the nearest shop and emergency service provider.

Equipment Inspection

All equipment must be inspected for signs of damage or wear prior to each use. Equipment found to be faulty will not be used and will be turned into your supervisor. If it is questionable, don't use it. All equipment must be entered into "Equipment Use Log" in Site/Safety book, on day of use.

Proper Fit and Use of Safety Equipment

All safety equipment comes with manufacturer's instructions on proper fit and use. There are many suppliers, instructions need to be reviewed prior to use by climbers.

Eye Protection

In most cases eye protection will only be *required* if a worker is drilling or grinding on a tower or using Cad Weld operations. Again, use good judgment. If you are doing something that generates particles or projectiles which could injure the eyes, wear the protection. Wind and rain and dust can be factors here too. Lightly shaded wrap around sunglasses that are ANSI approved are very good for full time use.

Hard Hats

On a tower job, all personnel, regardless if they are on the tower or on the ground are required to wear hardhats. Hardhats must be worn any time anyone is over six feet above the ground. Hard hats are required to have chinstraps so they can't be knocked or blown off.

EME Monitors

RF radiation badges come with manufacturer's operation and instruction books. Use this information for the proper use. All RF badges must be calibrated annually. Unless engineering studies have shown the site to be safe, EME-RF monitoring equipment must be worn while on tower

Proper Use of Safety Cable Brake

Most towers with a safety cable system will have the cable brake permanently attached. Before use, inspect the unit and test for proper operation. In cases where a worker must remove the cable brake from the cable to get past support brackets, a fall arrest lanyard must be attached to an adequate anchor prior to disconnecting the cable brake. **A worker on a tower must be attached/tied off 100% of the time, NO EXCEPTIONS.**

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Double Lanyard Climbing Method

Depending on the make & model of full body harness used, the attachment points for lanyards or Y-lanyards may vary. The key points are: When ascending or descending, a worker must have a lanyard attached 100% of the time. The lanyard must not exceed 6 feet in length and be able to withstand 5,000 pounds. The correct method is to hook one lanyard, move 2 to 3 feet, attach the second lanyard, then, detach the first lanyard and repeat this process alternating lanyard until reaching the point of the work.

Proper Tie-Off Once In Position

To achieve 100% fall arrest, one lanyard/lifeline should be connected at a point as far above the climbers head as possible. Such lanyard must be connected by use of double locking safety hook or double locking carabiner capable of withstanding the necessary 5000 pounds required by statute. At this time, a second lanyard or a positioning belt may be used as a work positioning device. When using any positioning device, a separate fall arrest connection must be in place.

Proper Rigging Procedures

Gin Pole

When rigging a gin pole, the rope must pass through the pole, not on the outside. Always make sure the clamps are tight and the safety pin is installed. Test the pole by applying pull weight before starting.

Blocks

All Blocks used on tower jobs must have a minimum rating of one ton. All blocks must also have a safety latch on the hook. Make sure the block is attached to the structure in such a manner that it will not bind or pull loose. Test by applying pull weight before starting.

Ropes

Any rope used to pull anything (i.e., tools, antennas, etc) must be a minimum of one half inch synthetic, preferably nylon. Ropes used as tag or non-lifeline safety lines can be of any diameter to do the job. When rigging, make sure ropes are not being rubbed across sharp edges or burrs and are free running.

Lifelines/Lanyards

No rope used for equipment, tools, or as a tag line may be used as a lifeline.

Capstan

A capstan is a unique piece of equipment. The main concern is that it is mounted to the tower leg securely and the safety chain is attached.

Proper knot tying

Primary knots are a Figure-8, a Bowline and a Half-Hitch/double halfhitch. With these knots you can do most rigging and can safely lift antennas, mounts, tools and cable. The figure eight on a bight is ideal for rescue rigging.

Maximum of 6 Hours on a Tower

No one person is to spend more than 6 hours in a day on a tower. If you are going to have a long day, the ground person and tower person should exchange places after no longer than 6 hours.

Situation Training

Every tower job is unique, therefore, before you start, make sure all the people on the job are brought together to discuss what the objectives are, how you plan to accomplish them, and any particular safety or operational issues that might arise during the job. Weather issues, communication and emergency services should be discussed at this time. Crane operation, Cad-Weld, Sno-Cats or Snowmobile use etc.

Documentation (Site and Safety Binder)

First Aid and emergency medical services information

This information must be correct and written on the **Site Safety Assessment Form**. This form is to be kept in a prominent place while working on or near the tower.

Latitude and Longitude

This information must also be on the **Site Safety Assessment Form**, written near the top.

Roadmap and Directions

This must also be on the **Site Safety Assessment Form**.

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Site Hazards

Site hazards must be assessed and documented on the **Site Safety Assessment Form**. Example: at the 50' level, climbing is difficult because of the configuration of microwave dishes. You must maneuver around these while maintaining 100% tie-off. This assessment must be reviewed during each visit. Additions or changes should be noted. If there are no changes, so state, date & initial the form

Fall Arrest and Rescue - Site Inventory

Use this section of the **Site Safety Assessment Form** to note information than can be of help in an emergency situation (i.e., a 100' crane is one-quarter mile down the road at a construction site). Review this during each visit. If there are no changes, so state, date & initial.

Equipment Use and Inspection Log

An **Equipment Use and Inspection Log** is to be completed at each location, before each climb and kept with the Site Safety Assessment Form in the Site Safety Binder.

Site Safety Binder

All documentation is to be kept “by site” in a binder that is on the job site while work is being performed.

Standard Fall Protection/Prevention Guideline Training Program and Emergency or Post Fall Medical/Rescue Information

All personnel are required to read and understand the **Standard Fall Protection/Prevention Training Guideline**, including Post Fall Emergency and Medical planning program and follow proper procedures at all times. A copy of this guideline will be kept in the Site Safety Binder at all times.

Rescue

The Fisk descender is the primary device used for rescue. All personnel must receive the hands on and video/classroom training in the use of the Fisk descender. No one will be certified to climb who does not receive and practice the rescue training.

Harness Styles

Hframe



X-Frame



Lanyards



Rescue



Site Weather



Site Safety





Inspect your surroundings



Site Safety



R-56 Grounding

The proper design and development of a communications site is critical for system performance and reliability, as well as safety to personnel during installation, maintenance, and operation of the communications system. With this in mind, Motorola developed the equipment installation manual, Standards and Guidelines for Communication Sites (commonly known as R56). This manual is a compilation of industry codes, standards, guidelines, and engineering best practices gathered from sources including ANSI, IEEE, NFPA, the National Electrical Code[®], OSHA, TIA, UL, and others.

Ground Halo



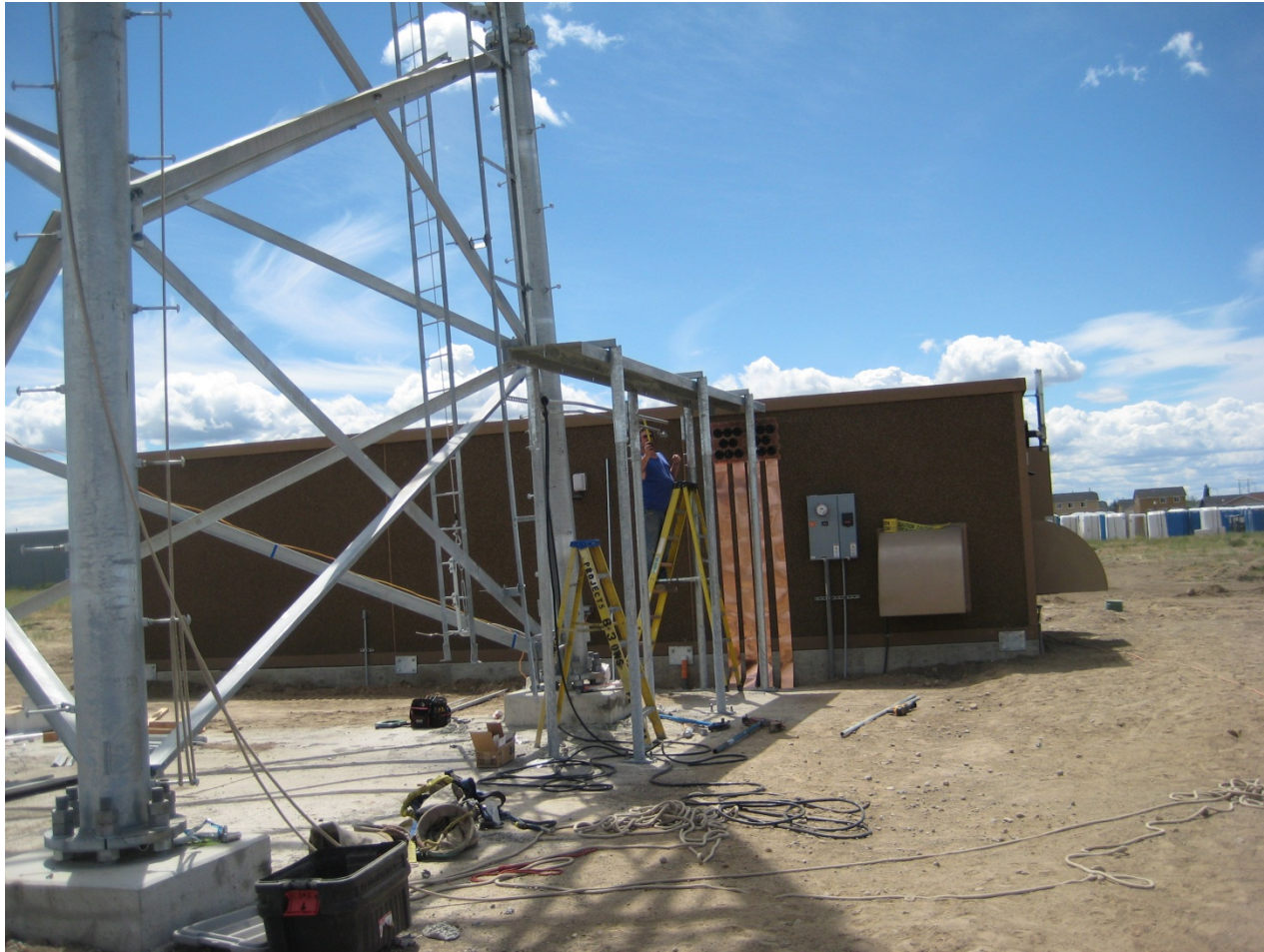
Ground Radial



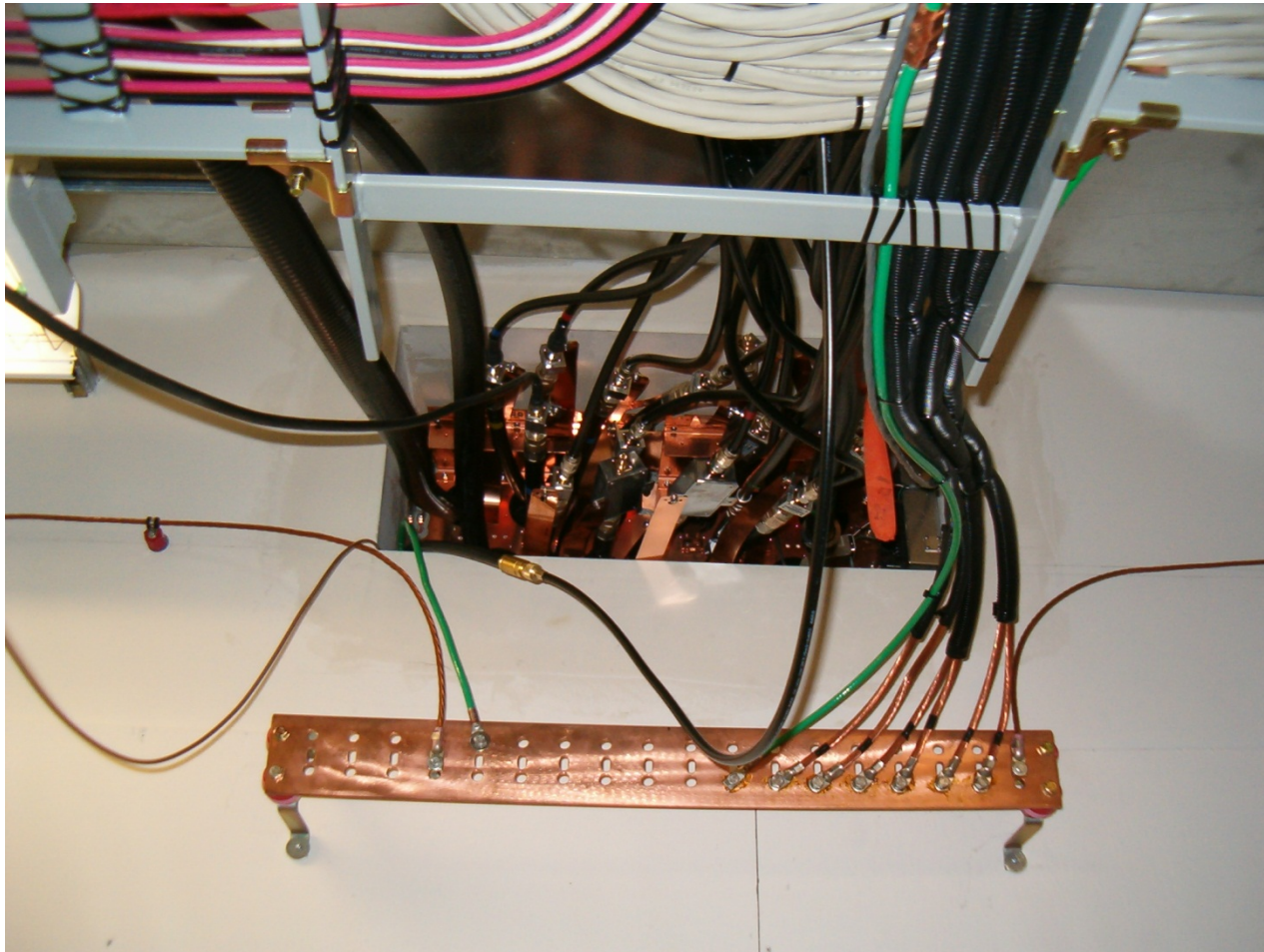
Adding Grounding enhancement material



Site Grounding



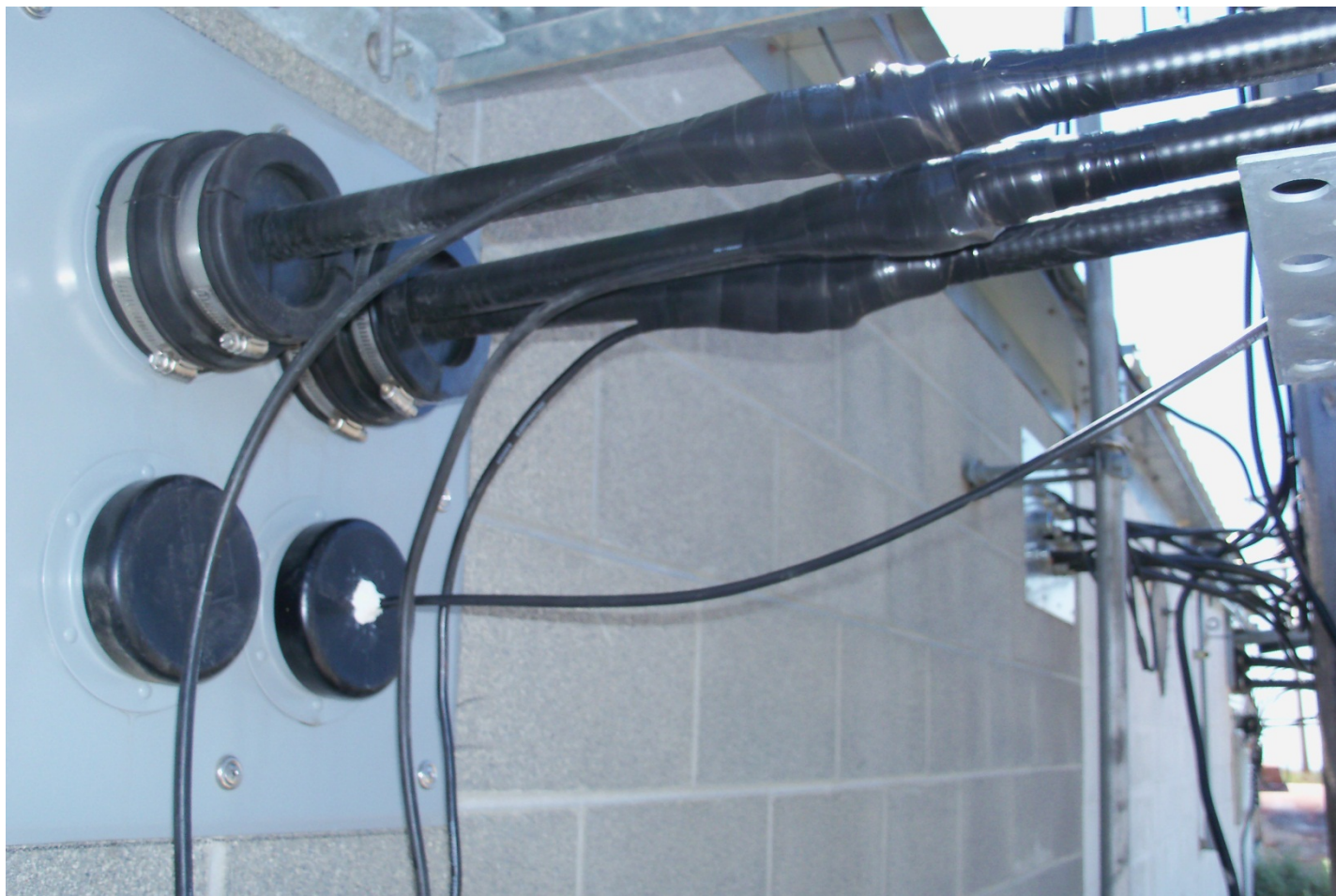
Master Bus bar with SPD



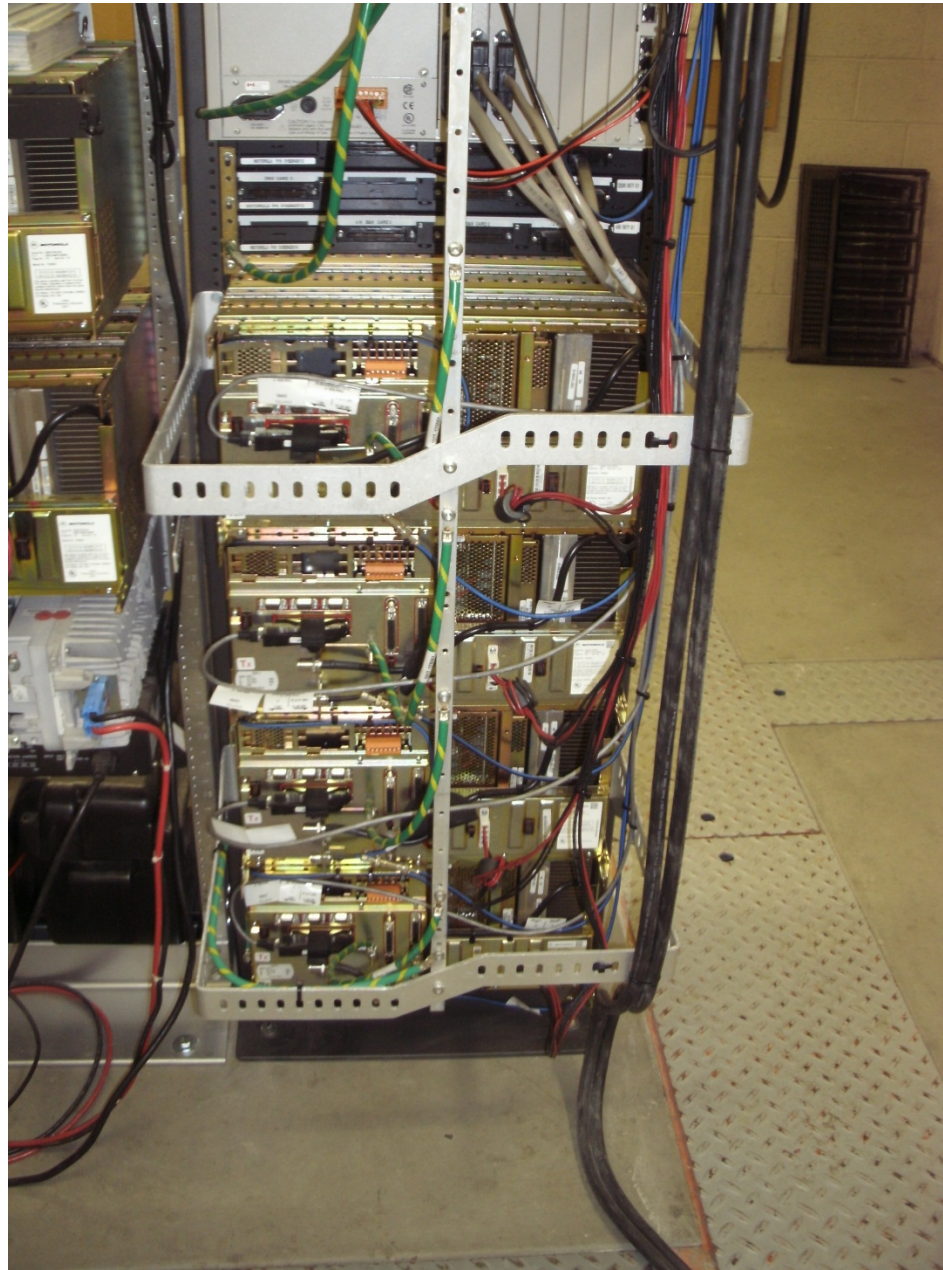
External Grounding



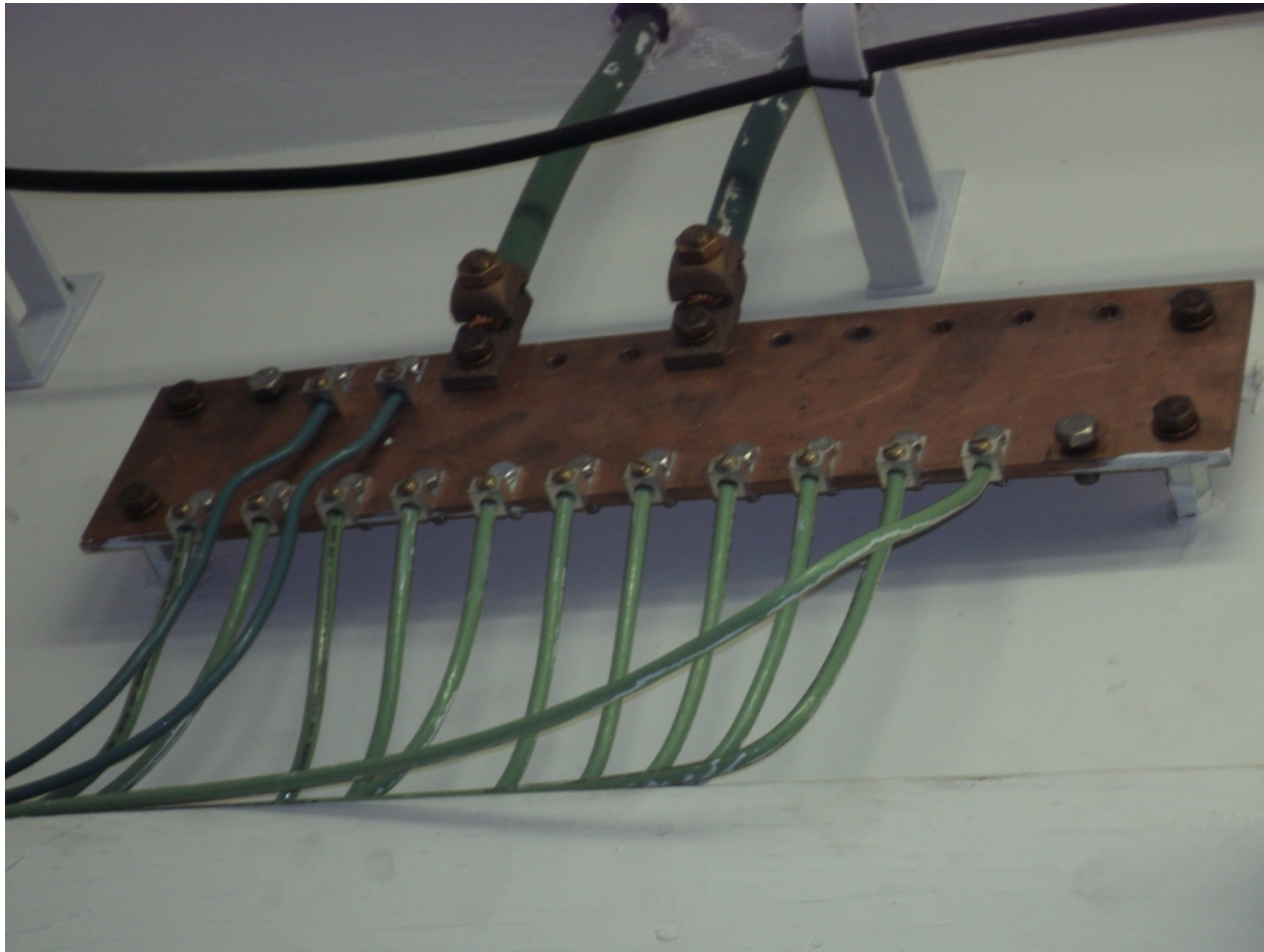
Proper cox grounding before it enters the building



Rack grounding



Mechanical Lugs



Internal Grounding



Thanks and Goodbye

